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ODU Resilience Collaborative

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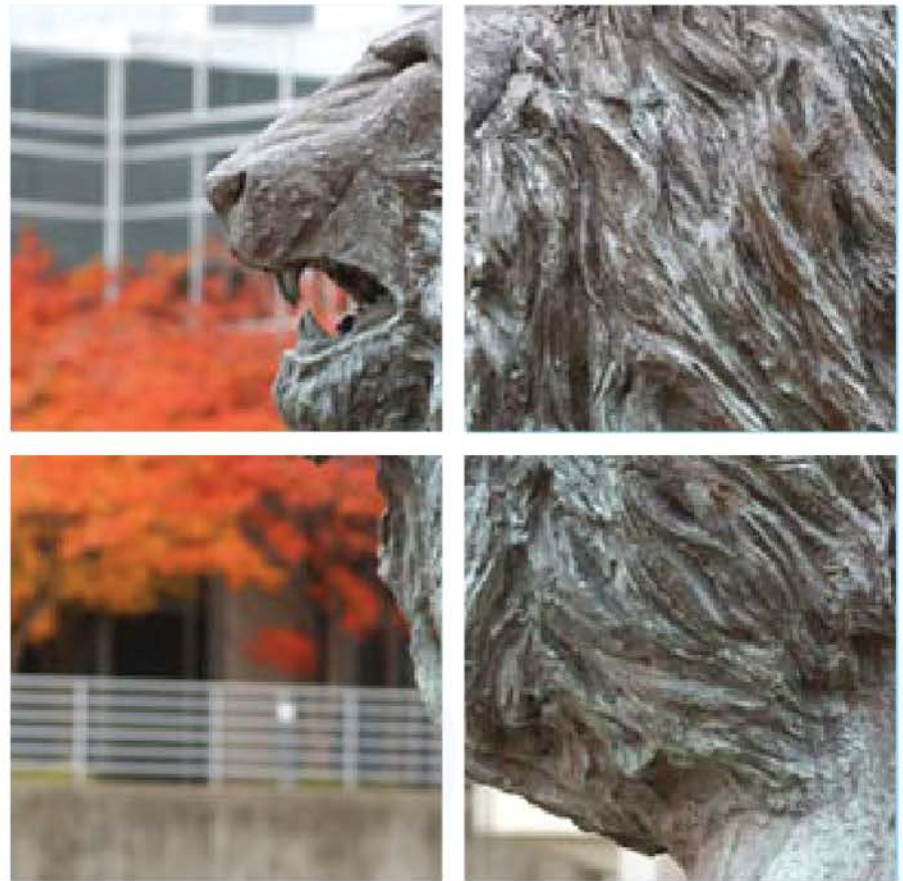
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Resilience Collaborative



Dr. Wie Yusuf

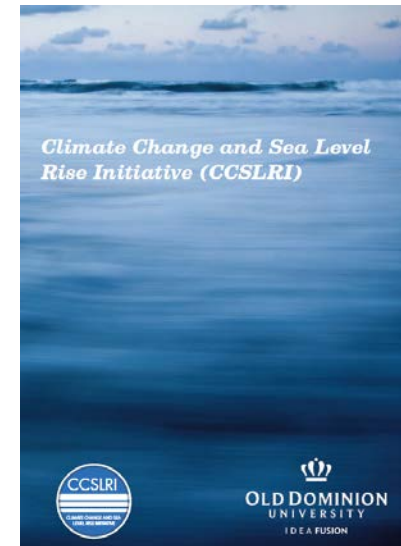
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August 1, 2017

From CCSLRI to the ODU Resilience Collaborative



- 2010 - ODU established the university-wide **Climate Change and Sea Level Rise Initiative (CCSLRI)**
 - “An effort to identify the multifaceted impact that climate change and rising sea levels will have on our region... to find solutions to the anticipated effects on our economy, housing, ports and infrastructure” (President John Broderick)
- 2016, ODU’s efforts re-energized, replacing CCSLRI with the **ODU Resilience Collaborative**
 - University-wide, multi-disciplinary initiative
 - Broader focus on resilience beyond climate change and sea level rise



University-wide, Multi-disciplinary Effort



What is the ODU Resilience Collaborative (ODU-RC)?



- Consortium of leading scholars actively engaged in research, education, and outreach on critical issues for resilience at the community, regional, national, and global levels
- Key focus:
 - Climate change and sea level rise
 - Adaptation
 - Health
 - Cybersecurity
 - Community resilience
- What we do:
 - Create and disseminate knowledge, develop and conduct innovative projects, and support decision making about resilience issues

RESEARCH
EDUCATION
OUTREACH

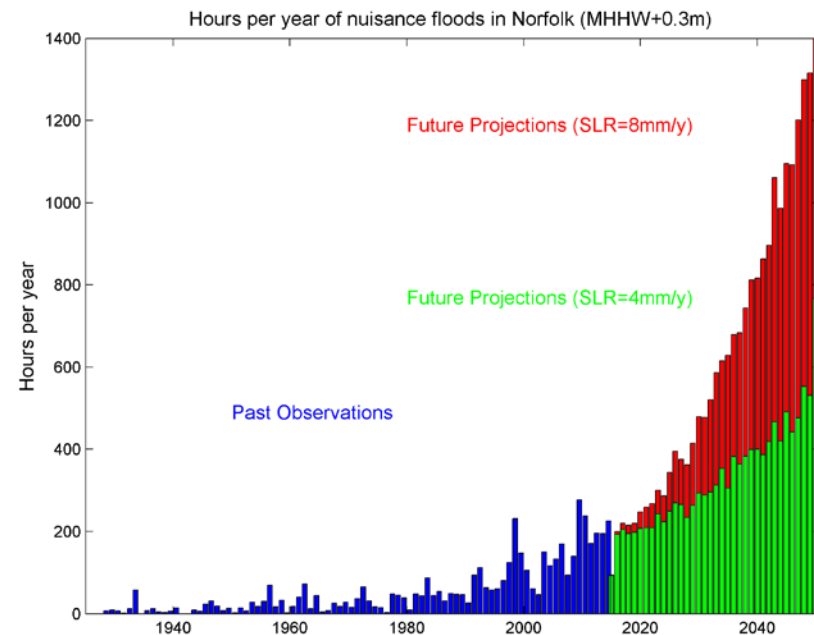


ODU-RC Research

ODU-RC Research Priority Areas



1. Coastal science and engineering
2. Critical infrastructure resilience
3. Flooding resilience
4. Urban resilience



Source: Tal Ezer, ODU Center for Coastal & Physical Oceanography
(<http://www.ccpo.odu.edu/~tezer/>)

Research Building Blocks



■ ODU-RC Research Seed Funds

- To create the building blocks for interdisciplinary research pursuing new and innovative research on coastal resiliency
 1. *Evaluating Unmanned Aerial Vehicles (UAVs) for Monitoring Coastal Change and Mapping Recurrent Flooding*
 2. *Investigating the Effects of Nature-based Coastal Measures in Storm Damage Mitigation*
 3. *Non-Profit Arts Organizations' Contribution to Community Resilience Building in Flood Prone Areas*
 4. *Assessing Effects of LID/BMP Practices as an Adaptation Tool in Improving the Chesapeake Bay Region Resilience to Climate Change and Sea Level Rise*



Research Accomplishments



- 2013 article by Tal Ezer, Larry Atkinson, et al. recognized as 'Highly Cited Paper' by Thomson's Web of Science
- Gulf Stream's induced sea level rise and variability along the U.S. mid-Atlantic coast

JOURNAL OF GEOPHYSICAL RESEARCH: OCEANS, VOL. 118, 685–697, doi:10.1002/jgrc.20091, 2013

JOURNAL OF GEOPHYSICAL RESEARCH
Oceans
AN AGU JOURNAL

Gulf Stream's induced sea level rise and variability along the U.S. mid-Atlantic coast

Tal Ezer,¹ Larry P. Atkinson,¹ William B. Corlett,^{1,2} and Jose L. Blanco^{1,3}

Received 26 October 2012; revised 18 December 2012; accepted 19 January 2013; published 6 February 2013.

[1] Recent studies indicate that the rates of sea level rise (SLR) along the U.S. mid-Atlantic coast have accelerated in recent decades, possibly due to a slowdown of the Atlantic Meridional Overturning Circulation (AMOC) and its upper branch, the Gulf Stream (GS). We analyzed the GS elevation gradient obtained from altimeter data, the Florida Current transport obtained from cable measurements, the North Atlantic Oscillation (NAO) index, and coastal sea level obtained from 10 tide gauge stations in the Chesapeake Bay and the mid-Atlantic coast. An Empirical Mode Decomposition/Hilbert-Huang Transformation (EMD/HHT) method was used to separate long-term trends from oscillating modes. The coastal sea level variations were found to be strongly influenced by variations in the GS on timescales ranging from a few months to decades. It appears that the GS has shifted from a 6–8 year oscillation cycle to a continuous weakening trend since about 2004 and that this trend may be responsible for recent acceleration in local SLR. The correlation between long-term changes in the coastal sea level and changes in the GS strength was extremely high ($R = -0.85$ with more than 99.99% confidence that the correlation is not zero). The impact of the GS on SLR rates over the past decade seems to be larger in the southern portion of the mid-Atlantic Bight near Cape Hatteras and is reduced northward along the coast. The study suggests that regional coastal sea level rise projections due to climate change must take into account the impact of spatial changes in ocean dynamics.

Citation: Ezer, T., L. P. Atkinson, W. B. Corlett and J. L. Blanco (2013), Gulf Stream's induced sea level rise and variability along the U.S. mid-Atlantic coast, *J. Geophys. Res. Oceans*, 118, 685–697, doi:10.1002/jgrc.20091.

ODU-RC Research Repository



- Learn more about faculty and student research:
<http://digitalcommons.odu.edu/odurc/>

- Examples:

- Stakeholder engagement
- Vulnerable population
- SLR modeling
- Tourism
- Green infrastructure
- Risk analysis
- Risk communication
- Cybersecurity
- Spatial analysis





ODU-RC Education

Resilience-related courses



- OEAS 108N: Understanding Global Climate Change
- GEOG 306T: Hazards: Natural and Technological
- WMST 306: Women, the Environment, and Climate Change
- COMM 695: Resilience, Hope, and Communication Across the Lifespan
- ENVH 438 Environmental Emergencies and Disasters
- PADM 712: Emergency Management and Policy
- CEE 726: Green Buildings
- GEOG 496: Urban Resiliency
- ECE 416: Cyber Defense Fundamentals



Academic Programs



■ Undergraduate programs

- Major and Minor in Cybersecurity
- Minor in Conservation Leadership
- Certificate in Spatial Analysis of Coastal Environments

■ Graduate Certificates

- Homeland Security (focus on emergency management or cybersecurity)
- Health, Communications and Culture
- Social Justice and Entrepreneurship
- Cybersecurity
- Modeling and Simulation in Oceanography

Youth Summer Camps



- BLAST (Building Leaders to Advance Science and Technology)

- Funded by the Virginia Space Grant Consortium
- Opportunities for 9th and 10th grade students to encourage STEM education through exploration of climate change and sea level rise resilience



- GenCyber Summer Camp

- Funded by the National Security Agency and National Science Foundation
- Interactive, hands-on learning activities to educate 8th to 12th grade students about cyber security as a Science, Technology, Engineering, and Mathematics (STEM) education and career pathways





ODU-RC Outreach

Hampton Roads Adaptation Forum



- Quarterly forums to facilitate regional coordination, the exchanging of information and particularly the sharing of best practices in adaptation
- Presentations of up-to-date research on flooding and sea level rise to those who will be using it to make public policy decisions



- Dialogue and networking between information providers and users

Building University-Community Partnerships for Resilience



- University-Community Partnerships to Build Community Coastal Resilience Program
 - Joint ODU-RC and Virginia Sea Grant program to build capacity for collaborative community-university projects that enhance resilience in coastal communities
 - Focus on connecting community organizations with university resources through **service learning projects**
 - Networking and matchmaking activities
 - Service learning workshops
- More info:
<https://sites.wp.odu.edu/resiliencepartnership>

Building University-Community Partnerships for Resilience NETWORKING EVENT

Date:
Friday, June 2nd
2017

Time:
9-11 am

Location:
Cape Charles/Isle
of Wight Room,
2nd floor ODU
Webb Center

Building Community Resilience

Flooding Urban Issues

Sponsored by:

- University-Community Partnership for Resilience
- ODU Resilience Collaborative
- Center for Regional Excellence
- Virginia Sea Grant

Want more information about the ODU Resilience Collaborative?

Visit our booth



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<https://www.odu.edu/impact/initiatives/resiliencecollaborative>